CLAIMS:

1. A method, comprising:

producing a histogram from a pixel domain image, the histogram establishing a relationship of possible pixel values versus respective aggregate numbers of pixels of the pixel domain image having such pixel values;

modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and

modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of the data to be hidden.

2. The method of claim 1, wherein the first possible pixel value is at or proximate to a target possible pixel value, the target possible pixel value being selected based on an aggregate number of pixels having the target possible pixel value.

3. The method of claim 2, wherein the target possible pixel value is selected when the aggregate number of pixels associated therewith is at least one of (i) a maximum number, (ii) a maxima, and (iii) above a threshold number, in the histogram prior to shifting.

4. The method of claim 2, wherein:

the pixel values of the pixel domain image are modified to shift the histogram from the first possible pixel value toward a second possible pixel value; and

the second possible pixel value is selected when an aggregate number of pixels associated therewith is at least one of (i) a minimum number, (ii) a minima, and (iii) below a threshold number, in the histogram prior to shifting.

5. The method of claim 4, wherein the second possible pixel value is selected based on its aggregate number of pixels being zero in the histogram prior to shifting.

6. The method of claim 2, further comprising offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, exclusive, by a shifting value such that the histogram shifts from the first possible pixel value toward the second possible pixel value.

7. The method of claim 6, wherein at least one of:

the shifting value is positive when the first possible pixel value is less than the second possible pixel value;

the shifting value is negative when the first possible pixel value is greater than the second possible pixel value; and

the shifting value is +/- 1.

8. The method of claim 1, further comprising:

a) expressing the data to be hidden in the pixel domain image as a series of true and false logic values;

b) associating each true logic value of the data to be hidden with one of the pixel values of the pixel domain image; and

c) modifying the pixel values of the pixel domain image that are associated with true logic values of the data to be hidden such that they have the first possible pixel value.

9. The method of claim 1, further comprising:

a) expressing the data to be hidden in the pixel domain image as a series of true and false logic values;

b) scanning at least some of the pixel values of the pixel domain image for pixel values of a target possible pixel value, the target possible pixel value being at or proximate to the first possible pixel value; and

c) offsetting each of the scanned pixel values of the pixel domain image by a first encoding value when a next logic value of the data to be hidden is true, and by a second encoding value when the next logic value of the data to be hidden is false.

10. The method of claim 9, further comprising repeating at least one of steps b) and c) until all of the true or false logic values of the data to be hidden are encoded into the pixel domain image.

11. The method of claim 9, wherein the true value is a logic 1, the false value is a logic 0, the first encoding value is +/-1, and the second encoding value is zero.

12. A method of decoding a pixel domain image containing hidden data, the pixel domain image having been encoded with the hidden data by (i) producing a histogram, the histogram establishing a relationship of possible pixel values versus respective aggregate numbers of pixels of the pixel domain image having such pixel values, (ii) modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and (iii) modifying some of the pixel values of the pixel domain image

such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of the hidden data, the method comprising:

using the modified pixel values of the pixel domain image having the first possible pixel value to recover at least a portion of the hidden data.

13. The method of claim 12, wherein:

the pixel domain image has been encoded with the hidden data by a) expressing the hidden data as a series of true and false logic values, b) associating each true logic value of the hidden data with one of the pixel values of the pixel domain image, and c) modifying the pixel values of the pixel domain image that are associated with true logic values of the hidden data such that they have the first possible pixel value; and

the method further comprises extracting a true logic value of the hidden data based on each pixel value of the pixel domain image having a value equal to the first possible pixel value.

14. The method of claim 12, wherein:

the pixel domain image has been encoded with the hidden data by a) expressing the hidden data in the pixel domain image as a series of true and false logic values, b) scanning at least some of the pixel values of the pixel domain image for pixel values of a target possible pixel value, the target possible pixel value being at or proximate to the first possible pixel value, and c) offsetting each of the scanned pixel values of the pixel domain image by a first encoding value when a next logic value of the hidden data is true, and by a second encoding value when the next logic value of the hidden data is false; and

the method further comprises:

scanning the at least some of the pixel values of the pixel domain image in the same order as in step b);

assigning a true logic level to an extracted hidden data sequence each time a scanned pixel value is equal to the target possible pixel value offset by the first encoding value; and

assigning a false logic level to the extracted hidden data sequence each time a scanned pixel value is equal to the target possible pixel value offset by the second encoding value.

15. The method of claim 14, wherein the true value is a logic 1, the false value is a logic 0, the first encoding value is +/-1, and the second encoding value is zero.

16. The method of claim 14, wherein:

the pixel domain image has been encoded with the hidden data by offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, exclusive, by a shifting value such that the histogram shifts from the first possible pixel value toward the second possible pixel value, prior to step c); and

the method further comprises offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, inclusive, by an equal but opposite shifting value such that the histogram shifts from the second possible pixel value toward the first possible pixel value.

17. The method of claim 16, wherein at least one of:

the shifting value equals the first encoding value;

the shifting value is positive when the first possible pixel value is less than the second possible pixel value;

the shifting value is negative when the first possible pixel value is greater than the second possible pixel value; and

the shifting value is +/- 1.

18. An apparatus including a processor operating under the instructions of a software program, the software program causing the apparatus to perform actions, comprising:

producing a histogram from a pixel domain image, the histogram establishing a relationship of possible pixel values versus respective aggregate numbers of pixels of the pixel domain image having such pixel values;

modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and

modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of the data to be hidden.

19. The apparatus of claim 18, wherein the first possible pixel value is at or proximate to a target possible pixel value, the target possible pixel value being selected based on an aggregate number of pixels having the target possible pixel value.

20. The apparatus of claim 19, wherein the target possible pixel value is selected when the aggregate number of pixels associated therewith is at least one of (i) a maximum number, (ii) a maxima, and (iii) above a threshold number, in the histogram prior to shifting.

21. The apparatus of claim 19, wherein:

the pixel values of the pixel domain image are modified to shift the histogram from the first possible pixel value toward a second possible pixel value; and

the second possible pixel value is selected when an aggregate number of pixels associated therewith is at least one of (i) a minimum number, (ii) a minima, and (iii) below a threshold number, in the histogram prior to shifting.

22. The apparatus of claim 21, wherein the second possible pixel value is selected based on its aggregate number of pixels being zero in the histogram prior to shifting.

23. The apparatus of claim 22, further comprising offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, exclusive, by a shifting value such that the histogram shifts from the first possible pixel value toward the second possible pixel value.

24. The apparatus of claim 23, wherein at least one of:

the shifting value is positive when the first possible pixel value is less than the second possible pixel value;

the shifting value is negative when the first possible pixel value is greater than the second possible pixel value; and

the shifting value is +/- 1.

25. The apparatus of claim 18, further comprising:

a) expressing the data to be hidden in the pixel domain image as a series of true and false logic values;

b) associating each true logic value of the data to be hidden with one of the pixel values of the pixel domain image; and

c) modifying the pixel values of the pixel domain image that are associated with true logic values of the data to be hidden such that they have the first possible pixel value.

26. The apparatus of claim 18, further comprising:

a) expressing the data to be hidden in the pixel domain image as a series of true and false logic values;

b) scanning at least some of the pixel values of the pixel domain image for pixel values of a target possible pixel value, the target possible pixel value being at or proximate to the first possible pixel value; and

c) offsetting each of the scanned pixel values of the pixel domain image by a first encoding value when a next logic value of the data to be hidden is true, and by a second encoding value when the next logic value of the data to be hidden is false.

27. The apparatus of claim 26, further comprising repeating at least one of steps b) and c) until all of the true or false logic values of the data to be hidden are encoded into the pixel domain image.

28. The apparatus of claim 26, wherein the true value is a logic 1, the false value is a logic 0, the first encoding value is +/-1, and the second encoding value is zero.

29. An apparatus for decoding a pixel domain image containing hidden data, the pixel domain image having been encoded with the hidden data by (i) producing a histogram, the histogram establishing a relationship of possible pixel values

versus respective aggregate numbers of pixels of the pixel domain image having such pixel values, (ii) modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and (iii) modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of the hidden data, the apparatus including a processor operating under the instructions of a software program, the software program causing the apparatus to perform actions, comprising:

using the modified pixel values of the pixel domain image having the first possible pixel value to recover at least a portion of the hidden data.

30. The apparatus of claim 29, wherein:

the pixel domain image has been encoded with the hidden data by a) expressing the hidden data as a series of true and false logic values, b) associating each true logic value of the hidden data with one of the pixel values of the pixel domain image, and c) modifying the pixel values of the pixel domain image that are associated with true logic values of the hidden data such that they have the first possible pixel value; and

the actions further comprise extracting a true logic value of the hidden data based on each pixel value of the pixel domain image having a value equal to the first possible pixel value.

31. The apparatus of claim 29, wherein:

the pixel domain image has been encoded with the hidden data by a) expressing the hidden data in the pixel domain image as a series of true and false logic values, b) scanning at least

some of the pixel values of the pixel domain image for pixel values of a target possible pixel value, the target possible pixel value being at or proximate to the first possible pixel value, and c) offsetting each of the scanned pixel values of the pixel domain image by a first encoding value when a next logic value of the hidden data is true, and by a second encoding value when the next logic value of the hidden data is false; and

the actions further comprise:

scanning the at least some of the pixel values of the pixel domain image in the same order as in step b);

assigning a true logic level to an extracted hidden data sequence each time a scanned pixel value is equal to the target possible pixel value offset by the first encoding value; and

assigning a false logic level to the extracted hidden data sequence each time a scanned pixel value is equal to the target possible pixel value offset by the second encoding value.

32. The apparatus of claim 31, wherein the true value is a logic 1, the false value is a logic 0, the first encoding value is +/-1, and the second encoding value is zero.

33. The apparatus of claim 31, wherein:

the pixel domain image has been encoded with the hidden data by offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, exclusive, by a shifting value such that the histogram shifts from the first possible pixel value toward the second possible pixel value, prior to step c); and

the actions further comprise offsetting each pixel value of the pixel domain image falling between the first possible pixel value, inclusive, and a second possible pixel value, inclusive, by an equal but opposite shifting value such that the histogram

shifts from the second possible pixel value toward the first possible pixel value.

34. The apparatus of claim 33, wherein at least one of:

the shifting value equals the first encoding value;

the shifting value is positive when the first possible pixel value is less than the second possible pixel value;

the shifting value is negative when the first possible pixel value is greater than the second possible pixel value; and

the shifting value is +/- 1.